June 27, 1967 G. M. OLSON 3,328,088

DUAL ATTACHMENT

Filed Sept. 8, 1965

FIG. 1

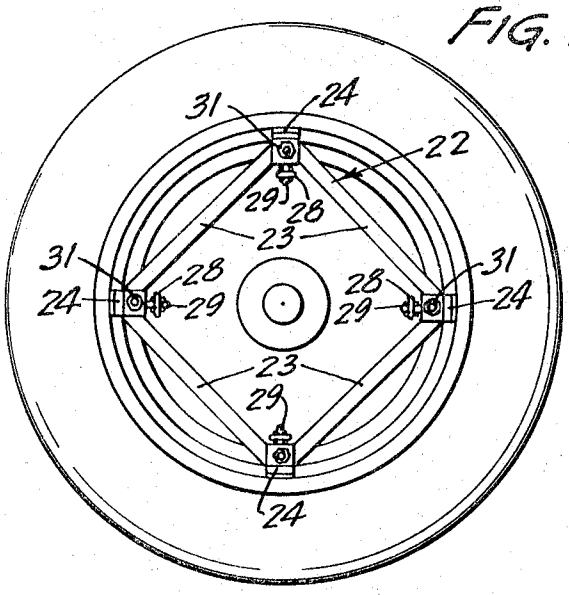



FIG. 3

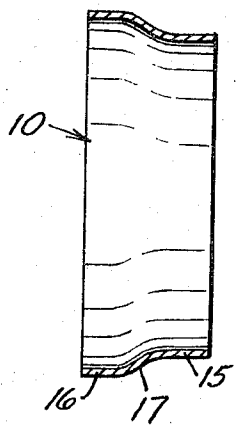
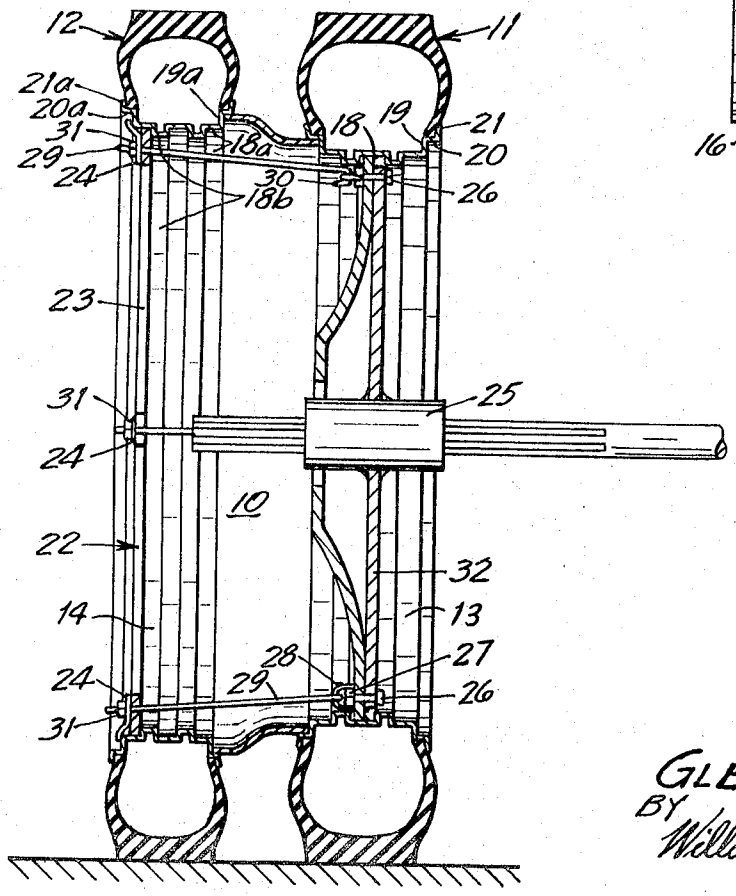



FIG. 2




INVENTOR
GLENN M. OLSON
BY
Williamson & Palmatier
ATTORNEYS

United States Patent Office

3,328,088

Patented June 27, 1967



3,328,088

# DUAL ATTACHMENT

Glenn M. Olson, 1912 6th Ave. N.,
Grand Forks, N. Dak. 58201

Filed Sept. 8, 1965, Ser. No. 485,827
3 Claims. (Cl. 301—36)

This invention relates to tractors and more specifically to a mounting device for permitting a dual wheel to be readily mounted on the regular rear wheel of a tractor.

An object of this invention is to provide a novel wheel mounting device, of simple and inexpensive construction, for use in readily mounting a dual wheel on the conventional rear wheel of a tractor to increase the traction of the tractor during operation thereof.

A more specific object of this invention is the provision of a wheel mounting device for use in permitting ready mounting on the conventional rear wheel of a tractor, of a dual wheel of different size than the conventional regular rear wheel, whereby the tractor may be quickly converted from single to rear dual wheel support and drive.

These and other objects and advantages of this invention will more fully appear from the following description made in connection with the accompanying drawings wherein like character references refer to the same or similar parts through the several views, and in which:

FIG. 1 is a side elevational view of the rear dual wheels of a tractor incorporating the mounting device, and

FIG. 2 is a vertical sectional view of FIG. 1 taken approximately along line 2—2 and looking in the direction of the arrows, and

FIG. 3 is a cross-sectional view of the mounting device.

Referring now to the drawings it will be seen that one embodiment of the novel mounting device designated generally by the reference numeral **10** is shown in interconnecting relation with a pair of rear dual wheels of a conventional tractor. To this end, it is pointed out that the regular rear wheel associated with a tractor is designated generally by the reference numeral **11** while the extra or dual wheel is designated generally by the reference numeral **12**. In the embodiment shown, the rim of the regular wheel **11** has a diameter smaller than the rim of the outer or dual wheel, the dual wheel having a smaller or narrower width dimension than the regular wheel.

It is desirable under certain circumstances to use rear dual wheels on the tractor especially when the tractor is used in conjunction with farming and during the early spring plowing, cultivation and the like when the soil is often very moist. Through the use of dual wheels, better traction may be developed and the increased surface area permits the tractor to be buoyed up or float as it traverses the moist soil. It is also desirable in many instances, when converting the tractor from single rear wheel to dual rear wheels to use a relatively narrow wheel as the dual wheels since this narrower wheel may be used in place of the regular tractor wheels at some later time for example during a cultivation operation. Under these circumstances it is desirable to use narrow wheels which very nicely fit between the rows or plants to be cultivated. However, when a different size wheel is used, these extra wheels have rims which are slightly larger than the rim of the regular tractor wheel and it is through the use of my mounting device **10** that wheels of different sizes may be mounted in dual relationship.

It will be noted that the wheel rim **13** of the regular wheel **11** is of smaller diameter than the wheel rim **14** of the extra or dual wheel **12**. In the embodiment shown, the wheel rim **13** has a diameter of approximately 34 inches and the wheel rim **14** has a diameter of approximately 38 inches. It will be seen that my novel mounting



device **10** extends between and is disposed in engaging relation with the wheel rims **13** and **14** respectively.

This mounting device **10** is of generally bell shape configuration and includes a first cylindrical rim-engaging portion **15** and a second cylindrical rim-engaging portion **16** concentric with but of larger diameter than the first cylindrical portion **15**. It will be noted that the respecive end rim-engaging cylindrical portions **15** and **16** respectively are interconnected by an intermediate generally frustoconical portion **17** which is integrally formed with these end cylindrical portions.

The wheel rims **13** and **14** are of conventional construction and it will be noted that each is therefore of generally channel-shaped configuration. The wheel rim **13** includes a web portion **18** having inner upturned annular flanges **19** integrally formed with the peripheral edges thereof and to which is secured slightly inwardly tapered transverse flanges **20** and upon which the beads of the tire T associated therewith is positioned. The outer peripheral edges of the transverse flanges **20** have outer upturned flanges **21** integrally formed therewith and which also engage and retain the beads of the tire thereagainst. It will be noted that the transverse flanges **20** while being disposed substantially parallel with respect to the axis of the associated wheel rim, these flanges do taper slightly inwardly toward each other.

The wheel rim **14** also includes a web portion **18***a* to which is secured inner upturned flanges **19***a*. Transverse flanges **20***a* are integrally formed with flanges **19***a* and flare slightly outwardly therefrom in the manner of flanges **20**. Upturned annular flanges **21***a* are integrally formed with flanges **20***a* and cooperate therewith for retaining the beads of the tire T thereagainst.

When the mounting device **10** is interposed in engaging relation with respect to the wheel rims **13** and **14**, it will be seen that the first cylindrical portion **15** has its outer peripheral surface disposed in engaging relation with respect to the inner peripheral surface of the outer transverse flange **30** of the wheel rim **13**. Similarly, the second cylindrical portion **16** has its outer surface disposed in engaging relation with the inner peripheral surface of the inner transverse annular flange **20***a* of the wheel rim **14**. Since the respective rim engaging end portions of the mounting device are of cylindrical configuration, and since the transverse flanges of the wheel rims which are engaged by the mounting device are of slightly tapered configuration, the mounting device will engage the respective wheels with interlocking effect. Thus the dual wheel is very effectively mounted on the rear tractor wheel for rotation therewith.

Means are provided for retaining the wheels in interlocked spaced relationship and this retaining mechanism includes a generally rectangular shape locking frame **22**. The frame **22** includes four frame elements **23** each of angle construction and joined together at their respective ends. This locking frame **22** is positioned against the inner surface of the web portion **18***a* of the dual wheel and against the outer surface of one of the small channel shaped annular protuberances **18***b* of the web portion **18***a* as best seen in FIG. 2. The locking frame is provided with four generally rectangular shaped angularly bent reinforcing gussets **24** each provided with an aperture therein and each secured to the joint between adjacent frame elements **23**. The wheel disc **25** of the regular tractor wheel **11** is provided with apertures thereon for receiving conventional mounting lugs **26** therethrough and which are carried by the axle hub **32** of the tractor. The regular lock nuts, associated with four of these lugs, are removed and are replaced with locking nuts **27** each of which is provided with an annular engagement or retaining ring **28** integrally formed

therewith. Elongate hook bolts **29** each of which are bent at one end to define hooks **30** thereat have their respective hooks **30** engaged by the retaining rings **28** and the other end of the bolts which are threaded project through the apertures in the reinforcing gussets **24** and each hook **29** is engaged by a nut **31**. It will be seen that by tightening the nuts **31**, the respective wheels are urged into tighter engaging relation with respect to the mounting device **10**. With this arrangement, disengagement of the wheels from the mounting device is completely prevented.

When my mounting device is used to convert the single rear wheels of a tractor to a dual wheel arrangement, the user first merely removes four of the conventional lug nuts that are used to mount the wheel disc **25** on the hub **32** of the tractor wheel axle and replaces these lug nuts with the lug nuts **27**. Thereafter the mounting device **10** is mounted on the inner or regular tractor wheel **11** so that the first cylindrical portion **15** thereof engages the inner surface of the outer transverse annular flange **20** of the wheel rim **13**. Thereafter the dual wheel **12** is positioned against the mounting device **10** so that the second cylindrical portion **16** of the mounting device **10** engages the inwardly facing transverse annular flange **20***a* of the wheel rim **14**. The hook bolts **29** are then hooked into engaging relation with respect to the retaining rings **28** and the locking frame is then positioned against the outer surface of the wheel rim **14**. The free threaded ends of the bolts **29** will then be passed through the apertures in the gussets and locking frame **22** and these threaded ends will then be engaged by the nuts **31**.

As the nuts **31** are tightened, the adjacent transverse flanges **20** and **28** of the wheel rims **13** and **14** will be urged into tightly interlocked relationship with respect to the cylindrical rim-engaging end portions of the mounting device **10**. It will therefore be seen that the entire operation of the mounting of the dual wheel on the regular tractor wheel may be very quickly and easily accomplished. It has been found that the specific cooperative relation between the cylindrical end portions of the mounting device **10** and the slightly tapered transverse flange portions of the wheel rim completely preclude relative rotation of one of the dual wheels relative to the other wheel. It has been found that even in working in very moist soil, not only is traction of the tractor improved by the use of dual wheels, but the imperforate mounting device **10** also tends to minimize any tendency of the rear wheels to sink deeply into the soil.

It will further be noted that by utilizing substantially cylindrical end portions on the mounting device, the mounting operation is more easily accomplished since the end cylindrical portions of the mounting device will always be maintained in substantially coaxial relation with respect to the axis of the inner connected wheels.

Thus it will be seen that I have provided a novel mounting device which is not only of simple and inexpensive construction but one which functions in a more



efficient manner than any heretofore known comparable device.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What we claim is:

**1.** In a rear dual wheel device for a tractor, a pair of tire-mounted rear wheels arranged in side-by-side coaxial relation and each wheel having an exterior diameter substantially the same size as the other wheel, each wheel including a wheel rim, one of said wheel rims having a greater diameter than the diameter of said other wheel rim, each of said wheel rims including an annular web portion having an outturned annular flange integrally formed therewith and extending radially therefrom, a transverse flange integrally formed with said outturned annular radial flange and extending substantially axially therefrom,

a one-piece mounting structure including a generally cylindrical first rim engaging portion engaging the inner surface of the annular transverse axially extending flange of the inner wheel rim in interlocked relation therewith,

an intermediate portion integrally formed with said first rim engaging portion and flaring axially and outwardly therefrom,

a generally cylindrical second rim engaging portion having a diameter greater than said first rim engaging portion and being integrally formed with said intermediate portion, said second rim engaging portion being engageable with the inner surface of the annular transverse axially extending flange of the outer wheel rim in interlocked relation therewith,

and releasable locking means spaced from said mounting structure and extending between and releasably engaging said wheel rims for retaining said mounting structure in interlocked relation with said wheel rims.

**2.** The mounting device as defined in claim **1** wherein said intermediate portion is of frusto conical configuration.

**3.** The mounting device as defined in claim **2** wherein said mounting structure is of imperforate construction.


**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,190,537 | 7/1916 | Fry | 301—36 |
| 1,327,607 | 1/1920 | Baker. | |
| 1,689,968 | 10/1928 | Pounds | 301—36 |
| 3,082,040 | 3/1963 | Degerness | 301—36 |
| 3,237,992 | 3/1966 | Kiesau et al. | 301—36 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 629,515 | 7/1927 | France. |



BENJAMIN HERSH, *Primary Examiner.*

RICHARD J. JOHNSON, *Examiner.*